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Claims 13, 16, 17, 19 and 22-24 are pending in the application.

Claim 13 has been amended to correct a minor typographical error. See original claim 2 for basis for the language "polymerization". The Applicants submit that the subject matter of amended claim 13 has already be before the Examiner in original claim 2 and, thus, no new matter or issues have been added.

The Applicants' counsel thanks Examiner Guarriello for the courtesy extended during the personal interview of March 21, 1996. It is sincerely believed that the interview materially advanced the prosecution of the subject application.

The rejection of claims 13, 16, 17, 19 and 22-24 under 35 U.S.C. § 112, second paragraph is obviated in part by the amendment of claim 13 shown above. The part of the Section 112 rejection regarding the language "heat treated" is respectfully traversed. One skilled in the art reading and comprehending the present specification, especially the first paragraph on page 11, would easily understand what is meant by the term "heat treated" since that term, as used in the application, is defined.

The Applicants respectfully submit that the claims fully comply with Section 112. Accordingly, withdrawal of the Section 112 rejection is respectfully requested.

The rejection of claims 13, 16, 17, 19 and 22-24 under 35 U.S.C. § 103 over Takimoto in view of JP '345 is respectfully

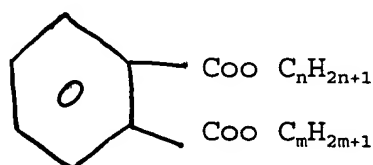
traversed. As was discussed at the interview, the claimed invention is not believed to be obvious over the cited references and should therefore be withdrawn for any one of the following reasons:

- (1) There is no motivation to combine the cited references because they do not relate to steering wheel pads (air bag cover).
- (2) Even if the cited references are combined, the combination does not teach or suggest a steering wheel pad.
- (3) The combination of references does not teach or suggest the composition of the claimed steering wheel pad:
  - (a) The combination of references does not teach or suggest the claimed heat-treated thermoplastic aliphatic polyurethane.
  - (b) The combination of references does not teach or suggest the claimed blended vinyl chloride resin having a defined average polymerization degree and (heat-treated) thermoplastic aliphatic polyurethane.
  - (c) The combination of references does not teach or suggest the claimed blended vinyl chloride resin, thermoplastic aliphatic polyurethane and alkyl phthalic ester having a linear chain ratio of an ester group of 80% or more.
- (4) The experimental evidence of record demonstrates the unexpected advantages of the claimed invention compared to the cited references.

One of ordinary skill in the art would not be motivated to combine Takimoto with JP '345, and therefore the Section 103 rejection should be withdrawn.

The claimed invention defines a steering wheel pad, specific structure, made of a soft vinyl chloride resin composition comprising:

100 parts by weight of a vinyl chloride resin having an average polarization degree of 700 to 2500;  
20 to 150 parts by weight of a heat treated thermoplastic aliphatic polyurethane; and  
60 to 150 parts by weight of an alkyl phthalic ester having the following chemical formula:



wherein m and n are 7 to 9, and said alkyl phthalic ester having a linear chain ratio of an ester group of 80% or more.

The claimed invention is not solely a composition claim. Rather the claimed invention is a steering wheel pad made from a particular soft resin. This claim limitation (steering wheel pad) requires a specific structure having specific properties in order to effectively produce a desirable cover and one that will open and operate correctly under a variety of conditions.

Neither of the cited references relates to steering wheel pads nor do they address or teach about their properties or problems. As noted above, Takimoto et al relates to the gripping portion of a steering wheel rim that provides a certain touch or feel while driving, and JP '345 is a high impact resistance

product for use as hoses, shoe soles and gaskets. Thus, one of ordinary skill in the art trying to make a steering wheel pad, for an aesthetic cover over an air bag device, would not be motivated to combine Takimoto with JP '345. The Applicants respectfully submit that the Examiner is unfairly using hindsight gleaned from the present specification for the motivation to combine Takimoto with JP '345. For this reason alone, the Section 103 rejection should be withdrawn.

However, even if Takimoto was combined with JP '345, the claimed invention would not be taught or suggested by the combination for the following reasons.

The combination of Takimoto and JP '345 does not teach a steering wheel pad, and therefore the Section 103 rejection should be withdrawn.

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As noted above, neither Takimoto nor JP '345 disclose a steering wheel pad. Thus, combining Takimoto with JP '345 one of ordinary skill in the art still would not have the claimed steering wheel pad.

Takimoto discloses steering wheel materials. Takimoto does not provide a steering wheel pad (which covers the air bag) but, rather, the material to be gripped by the hand. Steering wheel pad materials cover an explosive air bag mechanism and require different properties including the low temperature flexibility discussed in the present specification.

Steering wheel materials preferably have a soft feel when gripped by the hands of the driver. If the steering wheel material is hard at low temperatures, it causes no problems related to steering the automobile.

However, unlike steering wheel materials, the materials of a steering wheel pad are required to have characteristics other than feel in order to operate properly. For example, if the steering wheel pad materials are hard at the low temperature, it may cause a significant problem. For example, if a horn switch, an air bag device, or an energy absorbing device is mounted inside the pad, it may not function properly because of the hardness of the pad materials. Therefore, steering wheel pad materials must have different characteristics than the steering wheel material. Thus, a steering wheel material (Takimoto) does not teach or suggest a steering wheel pad material.

The combination of Takimoto and JP '345 does not teach or suggest the "composition" of the claimed steering wheel pad and therefore the Section 103 rejection should be withdrawn.

Takimoto (which relates to the gripped rim portion of a steering wheel) discloses using PVC, NBR, and a phthalic acid ester. JP '345 discloses combining PVC, a plasticizer and thermoplastic polyurethane.

Heat-treated thermoplastic aliphatic polyurethane.

This combination of references does not teach using a heat-treated thermoplastic aliphatic polyurethane resin according to the claimed invention.

The combination of Takimoto and JP '345 discloses a thermoplastic polyurethane, which is not heat-treated. Consequently, if a steering wheel pad were made of this material, that pad will not have good pliability characteristics at both low and high temperatures, which is essential to air bag covers and other free standing materials, because the thermoplastic polyurethane (not heat-treated) and the PVC will in most cases not blend homogeneously.

Average polymerization degree of 700 to 2500.

Furthermore, this combination of references does not disclose using a PVC having an average polymerization degree of 700 to 2500.

The steering wheel pad is in the direct line of eye-sight of a driver of an automobile. Therefore, the steering wheel pad must have a good appearance, i.e. no flow marks, border-lines or visible flaws.

If a PVC is used having a polymerization degree of less than 700, the PVC will have a poor mixing ability and dispersibility so that flow marks will occur when the steering wheel pad is molded. If the polymerization degree of the PVC is greater than 2500, the

Heat-treated thermoplastic aliphatic polyurethane.

This combination of references does not teach using a heat-treated thermoplastic aliphatic polyurethane resin according to the claimed invention.

The combination of Takimoto and JP '345 discloses a thermoplastic polyurethane, which is not heat-treated. Consequently, if a steering wheel pad were made of this material, that pad will not have good pliability characteristics at both low and high temperatures, which is essential to air bag covers and other free standing materials, because the thermoplastic polyurethane (not heat-treated) and the PVC will in most cases not blend homogeneously.

Average polymerization degree of 700 to 2500.

Furthermore, this combination of references does not disclose using a PVC having an average polymerization degree of 700 to 2500.

The steering wheel pad is in the direct line of eye-sight of a driver of an automobile. Therefore, the steering wheel pad must have a good appearance, i.e. no flow marks, border-lines or visible flaws.

If a PVC is used having a polymerization degree of less than 700, the PVC will have a poor mixing ability and dispersibility so that flow marks will occur when the steering wheel pad is molded. If the polymerization degree of the PVC is greater than 2500, the

shrinkage of the molded steering wheel pad will be high. See page 5, lines 12-19 in the present specification. It should be understood that when a steering wheel rim is covered, flaws can be corrected by filling holes, as necessary, and then wrapping the rim with leather. This cover hides flaw marks, repairs, and other mix or production flaws. This sort of corrective ability does not exist with air bag covers.

Takimoto teaches away from using linear chain phthalic acid ester.

The claimed phthalic acid ester has a linear chain ratio of an ester group of 80% or more and 7 to 9 carbon atoms. In contrast, the combination of Takimoto and JP '345 not only teaches using a phthalic acid ester having branched chains but also shows that the claimed linear chain phthalate would not work.

Table 2, located within col. 4, comparative example 6 of Takimoto discloses that straight chain phthalate (linear chain) having 7 to 9 carbon atoms (like in the claimed invention) does not work. In view of this negative view of straight chain phthalates, one of ordinary skill in the art thus would not use a straight chain phthalic acid ester based on the combination of Takimoto and JP '345, and surely not on a steering wheel pad. Rather they would be lead away from straight chain configurations.



The experimental evidence in the present specification demonstrates the unexpected advantages of the claimed invention compared to the combination of Takimoto and JP '345 and therefore the Section 103 rejection should be withdrawn.

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As is explained below, test results discussed within the specification demonstrate the unexpected advantages of using heat-treated thermoplastic aliphatic polyurethane (claimed invention) compared to thermoplastic polyurethane (Takimoto and JP '345). Colored PVC pellets and uncolored thermoplastic aliphatic polyurethanes pellets were used. Therefore, if the polyurethane and the PVC did not form a homogenous mixture during heat pressing (i.e. heterogeneous), a undesirable border-line between the colored PVC and the uncolored polyurethane will be seen.

Test pellets of the uncolored heat-treated thermoplastic aliphatic polyurethane and the colored PVC were compounded by extrusion. The test pellets were heat pressed to form a film using a press machine heated to 190°C. There was no border-line seen in the film produced. Therefore, there was a homogeneous mixture of the PVC and the heat-treated thermoplastic aliphatic polyurethane.

Test pellets of a normal uncolored thermoplastic aliphatic polyurethane (no heat-treatment) and colored PVC were compounded by extrusion. The test pellets were then heat pressed to form a film using a press machine heated to 190°C. Undesirable border-lines were seen in the film. Therefore, there was a

heterogeneous mixture of the PVC and the thermoplastic aliphatic polyurethane.

All of the Examples disclosed in the present specification used heat-treated thermoplastic aliphatic polyurethane. See page 10, line 35 to page 11, line 6 in the present specification.

The heat-treated thermoplastic aliphatic polyurethane can be prepared as follows. Pellets of normal thermoplastic aliphatic polyurethane are charged into an extruder and heated to a temperature of 180 to 220°C. The pellets are melted and extruded by the extruder, and the extruded material is cooled, for example, by using water. The cooled extruded material is then pelletized. The heat-treated thermoplastic aliphatic polyurethane is transparent and has enhanced processability. See page 11, first paragraph in the present specification.

Furthermore, the Applicants submit that comparative examples C3, C6 and C7 in the present specification represent Takimoto (no thermoplastic polyurethane). As can be seen from Tables 1-4, C3, C6 and C7 exhibited inferior properties compared to the claimed invention, which contains a heat treated aliphatic polyurethane. Applicants submit that this specific showing of unexpected results need not compare the claimed invention with all of the cited prior art, but only with the closest prior art. In re Holladay, 199 USPQ 516 (CCPA 1978). Applicants have compared the claimed invention to the closest prior art, namely Takimoto.

In view of the improbable combination of the cited prior art, the many differences between the claimed invention and the theoretical combination of the cited prior art, and the many unexpected advantages of the claimed invention, withdrawal of the Section 103 rejection is respectfully requested.

The rejection of claims 13, 14, 16, 17 and 19-24 under 35 U.S.C. § 103 over JP '345 in view of JP '454 is respectfully traversed. As was discussed at the interview, the claimed invention is not believed to be obvious over the cited references and should therefore be withdrawn for any one of the following reasons:

- (1) There is no motivation to combine the cited references because they do not relate to steering wheel pads (air bag cover).
- (2) Even if the cited references are combined, the combination does not teach or suggest a steering wheel pad.
- (3) The combination of references does not teach or suggest the composition of the claimed steering wheel pad:
  - (a) The combination of references does not teach or suggest the claimed heat-treated thermoplastic aliphatic polyurethane.
  - (b) The combination of references does not teach or suggest the claimed blended vinyl chloride resin, heat-treated thermoplastic aliphatic polyurethane and alkyl phthalic ester having a linear chain ratio of an ester group to 80% or more.
- (4) The experimental evidence of record demonstrates the unexpected advantages of the claimed invention compared to the cited references.

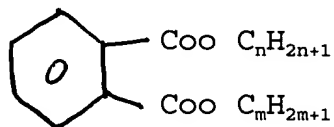
In view of the improbable combination of the cited prior art, the many differences between the claimed invention and the theoretical combination of the cited prior art, and the many unexpected advantages of the claimed invention, withdrawal of the Section 103 rejection is respectfully requested.

The rejection of claims 13, 14, 16, 17 and 19-24 under 35 U.S.C. § 103 over JP '345 in view of JP '454 is respectfully traversed. As was discussed at the interview, the claimed invention is not believed to be obvious over the cited references and should therefore be withdrawn for any one of the following reasons:

- (1) There is no motivation to combine the cited references because they do not relate to steering wheel pads (air bag cover).
- (2) Even if the cited references are combined, the combination does not teach or suggest a steering wheel pad.
- (3) The combination of references does not teach or suggest the composition of the claimed steering wheel pad:
  - (a) The combination of references does not teach or suggest the claimed heat-treated thermoplastic aliphatic polyurethane.
  - (b) The combination of references does not teach or suggest the claimed blended vinyl chloride resin, heat-treated thermoplastic aliphatic polyurethane and alkyl phthalic ester having a linear chain ratio of an ester group to 80% or more.
- (4) The experimental evidence of record demonstrates the unexpected advantages of the claimed invention compared to the cited references.

One of ordinary skill in the art would not be motivated to combine JP '345 with JP '454, and therefore the Section 103 rejection should be withdrawn.

The claimed invention provides a steering wheel pad made of a soft vinyl chloride resin composition comprising:  
100 parts by weight of a vinyl chloride resin having an average polarization degree of 700 to 2500;  
20 to 150 parts by weight of a heat treated thermoplastic aliphatic polyurethane; and  
60 to 150 parts by weight of an alkyl phthalic ester having the following chemical formula:



wherein m and n are 7 to 9, and said alkyl phthalic ester having a linear chain ratio of an ester group of 80% or more.

The claimed invention is not a composition claim with an intended use. Rather the claimed invention is a steering wheel pad. This claim limitation (steering wheel pad) requires a specific structure and specific properties.

Neither of the cited references relates to steering wheel pads. Thus, one of ordinary skill in the art trying to make a steering wheel pad would not be motivated to combine JP '345 with JP '454. The Applicants respectfully submit that the Examiner is unfairly using hindsight gleaned from the present specification for the motivation to combine JP '345 with JP '454. For this reason alone, the Section 103 rejection should be withdrawn.

However, even if JP '345 was combined with JP '454, the claimed invention would not be taught or suggested by the combination for the following reasons.

The combination of JP '345 and JP '454 does not teach a steering wheel pad, and therefore the Section 103 rejection should be withdrawn.

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Neither JP '345 nor JP '454 disclose a steering wheel pad. Thus, combining JP '345 with JP '454 one of ordinary skill in the art still would not have a steering wheel pad.

JP '345 and JP '454 merely disclose general polymeric compositions. A general teaching of polymer compositions does not disclose steering wheel pads, which have a specific structure and must possess specific properties. Not all polymeric compositions have the required properties to be useful to make air bag covers, i.e. a steering wheel pad. Thus, the general teachings of polymeric compositions according to JP '345 and JP '454 does not teach or suggest a steering wheel pad.

The combination of JP '345 and JP '454 does not teach or suggest the "composition" of the claimed steering wheel pad and therefore the Section 103 rejection should be withdrawn.

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JP '345 discloses combining PVC, a plasticizer and thermoplastic polyurethane. JP '454 discloses combining PVC with an aromatic thermoplastic polyurethane. Thus, the combination of JP '345 and JP '454 teaches to use a thermoplastic aromatic

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polyurethane instead of the claimed thermoplastic aliphatic polyurethane.

Heat-treated thermoplastic aliphatic polyurethane.

This combination of references does not teach using a heat-treated thermoplastic aliphatic polyurethane resin according to the claimed invention.

The combination of JP '345 and JP '454 discloses using a thermoplastic polyurethane, which is not heat-treated, and not aliphatic polyurethane. Consequently, if a steering wheel pad were made of this material, that pad will not have good pliability characteristics at both low and high temperatures because the thermoplastic polyurethane (not heat-treated) and the PVC will in most cases not blend homogeneously.

Phthalic ester.

The claimed phthalic ester has a linear chain ratio of an ester group of 80% or more and 7 to 9 carbon atoms. In contrast, the combination of JP '345 and JP '454 does not teach using the claimed phthalic ester.

The experimental evidence in the present specification demonstrates the unexpected advantages of the claimed invention compared to the combination of JP '345 and JP '454 and therefore the Section 103 rejection should be withdrawn.

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The following test results demonstrate the unexpected advantages of using heat-treated thermoplastic aliphatic polyurethane (claimed invention) compared to thermoplastic polyurethane or thermoplastic aromatic polyurethane (JP '345 and JP '454). Colored PVC pellets and uncolored thermoplastic polyurethanes pellets were used. Therefore, if the polyurethane and the PVC did not form a homogenous mixture during heat pressing (i.e. heterogeneous), an undesirable border-line between the colored PVC and the uncolored polyurethane will be seen.

Test pellets of the uncolored heat-treated thermoplastic aliphatic polyurethane and the colored PVC were compounded by extrusion. The test pellets were heat pressed to form a film using a press machine heated to 190°C. There was no border-line seen in the film produced. Therefore, there was a homogeneous mixture of the PVC and the heat-treated thermoplastic aliphatic polyurethane.

Test pellets of a normal uncolored thermoplastic polyurethane (no heat-treatment) and colored PVC were compounded by extrusion. The test pellets were then heat pressed to form a film using a press machine heated to 190°C. Undesirable border-lines were seen in the film. Therefore, there was a



heterogeneous mixture of the PVC and the thermoplastic polyurethane.

All of the Examples disclosed in the present specification used heat-treated thermoplastic aliphatic polyurethane. See page 10, line 35 to page 11, line 6 in the present specification.

The heat-treated thermoplastic aliphatic polyurethane can be prepared as follows. Pellets of normal thermoplastic aliphatic polyurethane are charged into an extruder and heated to a temperature of 180 to 220°C. The pellets are melted and extruded by the extruder, and the extruded material is cooled, for example, by using water. The cooled extruded material is then pelletized. The heat-treated thermoplastic aliphatic polyurethane is transparent and has enhanced processability. See page 11, first paragraph in the present specification.

Furthermore, the Applicants submit that comparative examples C6 in the present specification represents JP '454 (aromatic thermoplastic polyurethane). As can be seen from Tables 1-4 in the present specification, C6 exhibited inferior properties compared to the claimed invention, which contains a heat treated aliphatic polyurethane.

In view of the improbable combination of JP '345 and JP '454, the many differences between the claimed invention and the theoretical combination of JP '345 and JP '454, and the many


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In view of the above, reconsideration and allowance of the subject application are respectfully requested.

Respectfully submitted,

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